20 – 35. (cancelled)

36. (new) A data model for organizing a plurality of data elements, comprising:

a plurality of data elements, wherein each data element comprises:

a frame having quantitative data relating to the data element; and

an event associated with the data element, wherein the event is defined in part by chronological data; and

a link configured to associate two data elements comprising the same event.

37. (new) The data model of claim 36, further comprising a link model, wherein the link conforms to the link model.

Remarks

Applicant is proposing canceling all of the dependent claims and some of the independent claims in order to focus on claims directed to the data model and the method of modeling data. New claims 36 and 37 have been added to facilitate the discussion and are hopefully more clear and precise.

Amendments

Claims 1 and 19 have been amended to address the 112 issues and make them more readable. No new subject matter has been added and the scope of these claims has not been changed. Applicant believes that the cosmetic amendments to these claims will not require any additional searching by the Examiner.

New Claims

New claims 36 and 37 are directed to the data model and have been added to claim the data model in more standard language. These claims are hopefully more clear and precise than claim 19, which is also directed to the data model, but uses the "worldline" language. The term "worldline"

comes originally from the field of particle physics and is used to describe the path of an elementary particle through space and time and its interaction with other particles.

The Claimed Data Model Technology

The primary differences between the claimed data model and conventional data models found in the prior art are (1) the chronological nature inherent in each data element; and (2) the common event link that exists between related data elements. These unique aspects of the claimed data model are not found in the prior art.

Rao Reference

Rao teaches a "bottom up" multidimensional data model that partitions atomic data values at the micro level into several dimensions. Rao defines a dimension as an independent partitioning of the set of all values. (Column 4, lines 40 – 41). Thus, the fundamental organization of data taught by the Rao data model is based on multiple ways to divide up atomic values, which are defined as the smallest unit of data which continues to have meaning in the physical world. (Column 4, lines 30 – 31).

While the base unit of the data model taught by Rao is the atomic value, the base unit of the claimed data model is referred to as a "data element" in claims 1 and 36 and as a "worldline" in claim 19. The important difference between the atomic value of Rao and the data element of the present application is that the atomic value is the smallest unit of data which continues to have meaning in the physical world while the data element is a top-level data structure that includes other data structures and atomic values.

Thus, in contrast to the "bottom up" model taught by Rao, the claimed data model is a "top down" model that does not rely on organizing data at the atomic level (i.e., the partitioning of atomic values into dimensions as taught by Rao). Instead, the claimed data model and method organizes information into a data element that comprises a frame (or multiple frames) and an event (or multiple events). The frame includes quantitative data – these would be like the atomic values of Rao. The difference between the claimed data model and Rao, importantly, is that the atomic values in the frame do not define the organization of the data model, as taught by Rao.

Furthermore, Rao does not teach an event that is part of a data element. An event is a data structure that is part of a data element and is defined, at least in part, by chronological data. The

chronological data can also be atomic values. For example, a start date and an end date could be separate atomic values that chronologically define the event. Additionally, the event also includes one or more links. These links point to the same event that is included in another data element. Thus, a link associates two data elements based on a common event that is shared by each of the linked data elements.

The data model described in Rao fails to teach the claimed invention because it does not contemplate the top down organization of data by elements and the linking of the various elements to each other by common events.

A review of Figure 7 in Rao is instructive. First, Rao shows several cells at the bottom level. These cells are divided into sticks based on what product the data value belongs to. Additionally, the sticks themselves are separated out by year. The various sticks are then collected together into a slab, which represents the atomic data values over time for a particular product. The slabs are shown grouped together into a 3-dimensional block. Rao then describes the groupings in Figure 7 as corresponding to successive levels in a data consolidation path. (Column 6, lines 54 – 57). This description emphasizes the "bottom up" nature of Rao since the path goes from many atomic data values in the cells to successive levels of consolidation.

Conclusion

Applicant believes that Rao and the prior art of record do not teach the claimed data model and method of modeling data. Rao teaches a model with a "bottom up" approach to organizing atomic data values while the invention claims a "top down" data model where a data element has an inherent chronological nature and comprises events that are linked between two data elements that both have a common event.

Respectfully submitted,
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